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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,282	03/30/2004	Yasutaka Nakashiba	8008-1052	2273
466 7590 03/26/2007 YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			EXAMINER FENTY, JESSE A	
			ART UNIT	PAPER NUMBER
			2815	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/26/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/812,282

Applicant(s)

NAKASHIBA, YASUTAKA

Examiner

Jesse A. Fenty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 19, 22 is/are rejected.
- 7) ☒ Claim(s) 17, 18, 20 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/25/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the limitation "the P+ diffusion regions" in line 5 of the claim.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13, 15, 16, 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuka et al. (US 2002/0044012 A1) in view of Stolfi et al. (U.S. Patent No. 5,965,912).

In re claims 1 and 5, Otsuka discloses a semiconductor integrated circuit device, comprising:

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a first conductivity type substrate (20);

MOS transistors (11) which are disposed in said substrate and which include first gate insulating films; and

a MOS type varactor (13) element which is disposed in said substrate and which includes a second gate insulating film, a gate electrode and a second conductivity type well, wherein said second gate insulating film, said gate electrode and second conductivity type well are a variable capacitor.

Otsuka does not expressly disclose a thickness of said second gate insulating film being thinner than the thinnest gate insulating film among said first gate insulating film of said MOS transistor. Stolfa et al. discloses a MOS varactor where the thickness of the gate insulating film of the varactor element may be thinner than other MOS elements (Stolfa - column 3, lines 62-67; column 4, lines 1-12). It would have been obvious for one skilled in the art at the time of the invention to use a thinner gate dielectric for the varactor element as compared to the other MOS transistors for the purpose, for example, of increasing or decreasing the maximum capacitance of the capacitor (Stolfa - column 4, lines 12-14).

In re claim 2, Otsuka in view of Stolfa discloses the device of claim 1. The limitation regarding the maximum gate voltage applied is a recitation of the intended use of the claimed invention. Terms that simply set forth the intended use, a property inherent in or a function, do not differentiate the claimed composition of these elements from those known to prior art.

In re claims 3 and 4, Otsuka in view of Stolfa discloses the devices of claims 1 and 2 respectively, wherein said substrate is a semiconductor.

In re claims 6 and 10, Otsuka in view of Stolfa discloses the devices of claims 5 and 1 respectively, wherein said gate insulating film of said varactor and said gate insulating films of said plural MOS transistors are at a same level of the device.

In re claims 7 and 11, Otsuka in view of Stolfa discloses the devices of claims 5 and 1 respectively, wherein the thickness of said gate insulating film of said varactor is about three quarters of a thickness of said gate insulating films of said plural MOS transistors.

In re claims 8 and 12, Otsuka in view of Stolfa discloses the devices of claims 7 and 1 respectively, wherein the thickness of said gate insulating film of said varactor is about 6nm and the thickness of said gate insulating films of said plural MOS transistors is about 8nm (column 3, lines 62-64).

In re claims 9 and 13, Otsuka in view of Stolfa discloses the devices of claims 5 and 1 respectively, wherein said plural MOS transistors include PMOS and NMOS.

In re claim 15, Otsuka in view of Stolfa discloses the device of claim 1, wherein said MOS type varactor element further includes a second conductivity type diffusion layer (34) connected to said second conductivity type well (21)

In re claims 16 and 19, Otsuka in view of Stolfa discloses the device of claim 15, wherein said second conductivity type diffusion layer of said MOS type varactor element is adjacent to a side of said gate electrode.

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In re claim 22, Otsuka in view of Stolfa discloses the device of claim 19. The amplitude of the potential connected to a certain region is a recitation of the intended use of the device. Terms that simply set forth the intended use, a property inherent in or a function, do not differentiate the claimed composition of these elements from those known to prior art.

Allowable Subject Matter

Claims 17 and 18, 20, 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on M-F 5/4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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JAF

A handwritten signature in black ink, consisting of a vertical line with a horizontal stroke at the bottom and a diagonal stroke crossing the vertical line.

SPT Kenneth Parker